

COMPUTER
WORKSHOP

INTRODUCTION

Blu-ray may have won the high-definition format war, but the players are still quite expensive, and they're region coded, so you can't buy discs from abroad. A better option is to build your own player. In this month's *Computer Shopper* we'll show you how to build a player that outputs 1080p video and costs just £392 including VAT – a similar price to that of a high-end Blu-ray player.

For this price, you can build a multi-region Blu-ray player – something that's impossible to buy in the shops. What's more, your finished machine will be able to play HD DVDs, too. This may seem pointless under the circumstances, but the combo Blu-ray/HD DVD drive we're using in our player is the same price as a Blu-ray-only drive, and HD DVDs are very cheap at the moment.

As your player is in fact a full PC, it'll play back any video file you want to watch, and can even record TV if you add a tuner. It's the ultimate high-definition player.

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Build a Blu-ray and HD DVD player

Do you want the ultimate media player for watching high-definition content? David Ludlow shows you how to build your own multi-region Blu-ray and HD DVD player for just £392

Building a PC for your living room is a little different to building one for your office, as size, looks and noise become more important. We've considered these factors, as well as the price, in our choice of components. Our shopping list (below) shows all the parts we've chosen for our player.

If you decide to choose your own components, we recommend Sapphire's Radeon HD 3450 graphics card for HD playback, as its AVIVO HD support means that the card can deal with HD video decoding. It has an HDCP-compatible output (HDMI with an adaptor), is passively cooled and is a low-profile card, which the Asus P3-P5G33 barebones kit we chose requires. It doesn't come with a low-profile bracket, so you can either use a Dremel rotary tool to cut your own or buy a kit (see our shopping list, below). If you notice jerky playback from DVDs and HD movies, the culprit is probably your display. Try using a different connection. Our 32in Acer LCD TV didn't like the VGA or HDMI inputs from the PC, so we switched to component using the adaptor bundled with the graphics card.

We chose the CyberLink Media Center Remote and USB receiver because it's really cheap, but also because it's designed to work with PowerDVD. When you're watching HD movies, this remote will work without any need for configuration; if you buy the official Microsoft remote you'll need to remap some commands, which gets complicated. Fortunately, the CyberLink remote works perfectly within Media Center, and the Home button (which is shaped like a house) acts just like a Media Center remote's green button.

SHOPPING LIST

FROM WWW.EBUYER.COM:

Windows Vista Home Premium OEM	£59
Asus P3-P5G33 Barebones	£112
CyberLink Media Center Remote and USB receiver	£6
Kingston KVR800D2N5K2/2G 2GB DDR2 800MHz memory	£29
Pentium Dual Core E2200 processor	£51
Western Digital WD16000AAJS 160GB hard disk	£31
FROM WWW.KIKATEK.COM:	
LG GGC-H20L Blu-ray/HD DVD reader	£81
Sapphire Radeon HD 3450	£23
TOTAL	£392 inc VAT

OPTIONAL EXTRAS

FROM WWW.MORECOMPUTERS.COM:

DVI-to-HDMI adaptor	
XFX MA-BK01-LP1K Low Profile Bracket	£7.83

1 Assemble your PC as directed in the P3-P5G33's manual. Remove your graphics card's backplate and either cut a new one from the low-profile blanking plates or use the kit on the shopping list. You can unplug the analogue connection and just make the DVI and TV out ports available. If you need a VGA output, a DVI-to-VGA adaptor will do the job.

2 In its default state your PC will refuse to enter Sleep mode while the USB receiver is plugged in, so you need to change a jumper on the motherboard, called USB_PWR. There are two of these jumpers, and each is labelled with the numbers of the ports it covers. Change the jumper for the USB port you're going to use. When you look at the motherboard from the back, the four ports on the right are ports one to four; the two ports on the left and the two on the front panel are ports five to eight.

The jumper is connected to two pins, leaving a third exposed. Lift the jumper off with tweezers and fit it over the previously exposed pin and the middle pin.

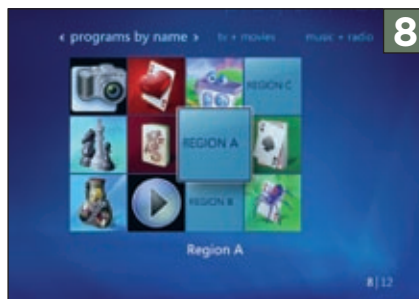
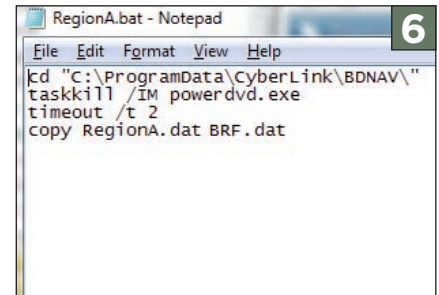
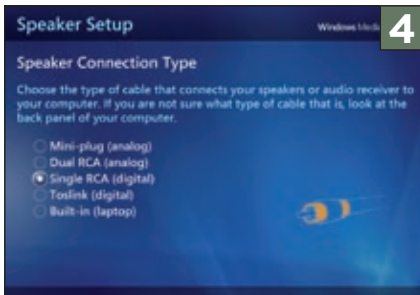
3 Install Windows using the installation disc, and the drivers provided by Asus. Download the graphics card drivers from www.ati.com and install them. Then install PowerDVD from the CD provided in the LG drive's box, and update it to version 3613 from <http://tinyurl.com/bqnhm>. You need to do this to get the Blu-ray region-switching to work.

4 Plug your remote receiver into one of the USB ports that corresponds with the jumper you changed. Try pressing the Home button to start Media Center, and then use the remote to run through the configuration wizard. To get surround sound in DVD movies, you'll need to set up your audio. In the setup wizard, tell Media Center that you're using a Single RCA (digital) connection and that you've got 5.1 surround-sound speakers, otherwise you'll get only stereo sound.

Once complete, hit the power button on the remote. If your PC doesn't go into Sleep mode, your keyboard or mouse is probably waking it. This is easy to fix. Right-click on Computer in the Start menu and select Device Manager. Double-click the entries for your keyboard and mouse in turn to bring up the Device Properties dialog box. Click on Power Management and remove the tick from Allow this device to wake the computer. Your PC should now go into Sleep mode, and holding the remote's power button will wake it.

5 Start PowerDVD, right-click the main window and select Configuration. Under Audio, change Speaker Environment to S/PDIF, otherwise you'll get only stereo sound through your home-cinema amplifier. Click on the Video link and select Run full screen. Click OK to apply the changes.

PowerDVD stores the Blu-ray region coding in the `c:\ProgramData\CyberLink\BDNAV\BRF.dat` file (you'll



need to be able to see hidden files). To make our player region-free, we need to make a copy of this file for each Blu-ray region (A, B and C) and write a batch file to change them around.

First, open the directory that stores the BRF.dat file. In PowerDVD, open the Configuration page and click on the Region tab – it should be set to Region B. Copy and paste the BRF.dat file to make a copy. Call the copy RegionB.dat. In PowerDVD, change the Region to A and click OK. Copy the BRF.dat file and call it RegionA. Follow the same steps for Region C.

6 Now that we have three configuration files we need to write batch files that copy the correct region file into PowerDVD automatically. This can't happen if PowerDVD is running, but we'll write a command that automatically shuts it down. You can put the batch files anywhere on your PC, but it's probably sensible to put them in a specific directory, such as c:\batchfiles. Create a batch file called RegionA.bat in this directory and add the following lines:

```
cd "c:\ProgramData\CyberLink\BDNAV\"
taskkill /IM powerdvd.exe
timeout /t 2
copy RegionA.dat BRF.dat
exit
```

This stops PowerDVD, waits to make sure the process has ended and then copies the correct configuration file. If you run the file and restart PowerDVD, you'll find that it's now Region A.

You now need to create RegionB.bat and RegionC.bat files in the c:\batchfiles directory. They have the same contents as above, except that the copy line should refer to RegionB.dat and RegionC.dat respectively.

7 Next we need to tie all our components together. If you start Windows Media Center, you'll find that inserting an HD DVD or Blu-ray disc pops up an error message saying that there's no program installed to play them.

This is because Media Center can't actually play these discs. You need to install the free PowerDVD Media Center plug-in from <http://ourmediacenter.com/node/9>. We used the Extra Menu Strip 32-bit link to create a new menu item in Media Center, where you can launch PowerDVD. It will also launch automatically when you insert an HD DVD or Blu-ray disc. When the film has finished, you need to return to Media Center by pressing the home button.

8 At the moment we've got no easy way to change the Blu-ray region by calling the batch files we created in Step 6. We can add these into Media Center quite easily by creating .mcl files in the c:\users\<username>\AppData\Roaming\Media Center Programs directory, where <username> is the name of the user you're logged on as.

Start by creating a file called RegionA.mcl and opening it in Notepad. Type:

```
<application
  Title = "Region A"
  Run = "C:\batchfiles\regiona.bat"
  BGColor = "RGB(63,24,172)"
  Name = "Region A"
  CompanyName = "Home"
>

<capabilitiesRequired
  directX="False"
  audio="False"
  video="False"
  intensiveRendering="False"
```

► The completed Media Center is small and will look unobtrusive in any living room

```
console="True"
/>
</application>
```

Now create files called RegionB.mcl and RegionC.mcl with the same contents as above, but changing all instances of Region A for the corresponding region.

If you're running Media Center, restart it. Your new applications will appear under Online Media, Program Library. Run one to test it. You'll get a message that says you need an internet connection, but you can ignore this.

9 You can use your new Media Center to watch more than just pre-recorded discs. To add support for a wide range of files, install the Vista Codec Package (<http://shark007.testbox.dk>). This covers most common formats.

In Media Center you can add new folders that contain videos you want to watch by going to Settings under Tasks, selecting Library Setup and selecting Add folder to watch. Select the folder or folders you want.



Next month

BUILD A DUAL-CORE PC FOR £150

If you want a new PC but you don't have much money, we'll show you how to build something powerful on a tight budget.